Epitomes

Important Advances in Clinical Medicine

Plastic Surgery

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The Council on Scientific Affairs of the California Medical Association presents the following epitomes of progress in plastic surgery. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and clinical importance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, and scholars to stay abreast of progress in medicine, whether in their own field of special interest or another.

The epitomes included here were selected by the Advisory Panel to the Section on Plastic Surgery of the California Medical Association, and the summaries were prepared under the direction of C. Gregory Jellinek, MD, and the panel.

Melanoma—Current Concepts

IN WHITES, melanoma represents one of the most rapidly increasing cancers and is the leading killer among all skin diseases, accounting for as much as 2% of the number of cancer deaths in the United States. By the end of the 20th century, the lifetime risk of melanoma for whites in the United States is forecasted to be 1 in 90. A direct relationship between UV radiation exposure and melanoma is strongly supported by current epidemiologic data. Studies on five continents have shown an inverse linear relationship between melanoma and latitude, with increasing incidence and mortality as one approaches the equator. Melanoma is less likely to develop in more heavily pigmented persons. The rate of tumor occurrence is 8 to 19 times greater in white Americans than in black Americans. Still, the exact role of UV radiation remains unclear because no animal model simulating clinical experience exists, and it is unclear what amounts and patterns of UV exposure are required to induce melanoma.

Grossly, melanomas typically vary in color and have irregular borders and raised or ulcerated surfaces. Any pigmented lesion with these features or that shows a change in gross structure should be examined histologically. Besides surgical biopsy, a detailed history and physical examination along with a chest radiograph and serum liver enzyme panel are the minimal steps in evaluating such a lesion.

The initial therapy for all primary melanomas should be surgical, although the extent of resection necessary to obtain regional control is continually being reevaluated. In situ tumor requires 0.5- to 1-cm margins of grossly uninvolved tissue. Tumors from 1 to 4 mm are adequately controlled with margins from 1 to 2 cm, the greater margins reserved for thicker lesions. Above 4 mm in thickness, margins of 3 cm have been recommended, but these recommendations are based only on nonprospective data. Reconstruction following ablative surgical procedures is generally straightforward, proceeding from primary closure through grafts and local or distant flaps, with special attention needed when dealing with the acral parts.

With adequate primary extirpation, local control is obtained in more than 95% of patients and regional control in 97% of patients. Lymphatic nodal lesions with obvious clinical involvement must be excised completely and anatomically. The treatment of occult disease in lymphatic drainage basins (elective lymphadenectomy) remains an area of continued controversy. Where the chance of occult disease is minimal, as in thin tumors (< 1 mm thickness), lymphadenectomy is deferred. A considerable number of patients with thick tumors (> 4 mm) will have microscopic spread to lymph nodes, and lymphadenectomy is therefore therapeutic. For patients with intermediate-size tumors (1.0 to 3.99 mm), the recently described technique of sentinel node biopsy may offer a method of selectively documenting occult nodal disease before extirpation. The technique has a reported false-negative rate of roughly 5%. The long-term effect on survival has yet to be determined.

Recurrent disease or intransigent tumors can be treated with re-excision, irradiation, or the isolated limb perfusion of chemotherapy. Re-excision is appropriate for limited recurrent or persistent disease. Isolated limb perfusion, with carboplatin, dacarbazine, or thiotepa, can also be used repeatedly to preserve limb function and ambulation and gain control of multiply recurrent localized disease, with a number of patients being disease-free for five to eight years.

Metastatic melanoma is associated with a poor prognosis, although the clinical course can be unpredictable. Isolated metastatic tumor should be resected. Parenteral chemotherapy and radiotherapy have not been found to increase the overall survival rate of most patients.

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Facial Fractures

FEW AREAS OF PLASTIC SURGERY have changed as rapidly as the management of complex facial fractures. Just over a decade ago, these patients were treated with a conservative "wait and see" attitude, and the subsequent deformities that developed were hard to correct. Those patients who did undergo surgical therapy early were treated with small incisions, minimal exposure of fracture segments, and fixation with wires or external devices, frequently yielding poor functional and aesthetic results. This conservative approach, with delayed operative repair, has evolved to an aggressive, early, one-stage approach. This evolution has been made possible by several developments, most notably the contributions of Paul Tessier of Paris, who is considered the father of craniofacial surgery. Tessier showed that it was possible to expose nearly the entire craniofacial skeleton through relatively hidden incisions and to "work" on the bone. This may consist of osteotomy and repositioning of a segment of bone to a more functional or aesthetic position or, as in the case of displaced facial bone fractures, repositioning the bone to its proper anatomic position.

Several principles have evolved to guide us in our care of patients with facial trauma. First, a precise anatomic diagnosis is imperative. The history and physical examination are supplemented by computed tomographic (CT) scans as indicated. The precision of CT is such that with both axial and coronal cuts, the fracture pattern can be precisely identified. The CT scan allows those patients to be selected who may not require surgical intervention and, for those who require surgical therapy, the precise planning of the operative procedure.

Through a combination of coronal, upper and lower eyelid, and intraoral incisions, nearly the entire craniofacial skeleton can be approached through subperiosteal dissection. Fracture segments are identified and reduced to their proper anatomic position. Inadequate exposure of fracture segments may result in inadequate fracture reduction and malpositioning, leading to a difficult-to-correct secondary deformity. Three-dimensional reconstruction to restore preinjury facial height, width, projection, and a functional occlusion is the goal.

After fracture exposure and anatomic reduction, the bones must be held in position during the healing phase. Internal fixation devices—tiny plates and screws, some less than 1 mm in thickness—are frequently used to stabilize the bony fragments. With the development of the principle of primary bone grafting, the incidence of secondary soft tissue scarring and contraction and associated deformities has been dramatically reduced. Bone grafts are used to replace missing or damaged bone or to correct contour deformities. Outer table cranial bone provides an excellent source in patients with craniofacial trauma.

As part of the goal of reestablishing the pretraumatic appearance, management of the soft tissue of the face is critical. Areas of abrasion are meticulously cleaned and debrided as necessary, and soft tissue lacerations are repaired anatomically. After subperiosteal dissection to expose the facial skeleton, most of the soft tissue attachments to the underlying skeleton are lost. It is important to resuspend the soft tissue envelope over the underlying foundation. This is accomplished by attaching with sutures the periosteum from the soft tissue envelope to the skeleton either directly to remaining periosteum or occasionally to plates and screws that were used for fixating fracture fragments. This will redrape the soft tissue envelope and prevent the soft tissue droop that in the past has been associated with wide exposure of complex fractures of the face.

The principles of the management of complex facial fractures continue to evolve. A more aggressive approach using craniofacial principles and techniques, including anatomic fracture fragment reduction, relatively rigid internal fixation with primary bone grafting as necessary, and definitive soft tissue management, seems to have dramatically diminished the incidence of secondary deformities associated with these devastating injuries.

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Role of Endoscopic-Assisted Plastic Surgery in Aesthetic Therapy

THE PROLIFERATION OF endoscopic procedures in the surgical specialties has been astounding. In general surgery, over a several-year period laparoscopic cholecystectomy has gone from a curiosity to the most commonly performed general surgical procedure. Today, virtually every field has found valid application for endoscopy based on the premise that these techniques diminish patient morbidity compared with "open" procedures. In no specialty is patient morbidity of more concern than in aesthetic plastic surgery.

The most common endoscopic procedure currently done by plastic surgeons is the brow lift. In its traditional form, this requires elevating a transcoronal flap (an incision across the top of the scalp from ear to ear) anteriorly to the level of the supraorbital rim with the resection of corrugator and procerus muscles, followed by the excision of excess brow skin. With the use of the endoscope, the forehead can be elevated in a subgaleal or subperiosteal plane by several small (1.5 to 2 cm) transverse or longitudinal incisions within the hairline. At the level of the orbital rim, the periosteal attachments of the brow are sharply released, and the depressor muscles are resected with grasping forceps while visualizing the supraorbital